the quick movement which may be regarded as an irregularly recurring reflex that doubtless has among its objects the renewal of moisture on the corneal surface, which otherwise would become dry. This natural blinking movement seems in the monkey not to employ the orbital portion of the *orbicularis palpebrarum*, but only the palpebral. It occurs habitually as a bilateral and symmetrical movement. It is far less extensive in action than the closure of the palpebral opening, which ensues when the monkey grimaces on being threatened with a blow. That in the blinking the contraction of the palpebral part of the orbicularis is not however the whole of the muscular mechanism at play, is clear from the fact, that in the awake and active animal with fully opened eyes, the blinking still remains bilateral, subsequent to section of the facialis nerves of one side. The blinking by the right eye was of course normal in character. As the right eye blinked, the upper lid of the left eye quickly dropped three to four millimetres over the globus of that side, and was then synchronously with the lifting of the right upper lid lifted again. The left lower lid was not on any occasion detected to move at all. The quick fall of the upper lid of the left eye must have been due under these circumstances to inhibition of the tonus of the left levator palpebræ superioris muscle. This brings the co-ordination of the reaction into line with that which I have described for other movements under the term reciprocal innervation.

It is interesting that Panas, Sappey, Fuchs, Wilmart and others, who have carefully and particularly studied the mechanism of the closure of the eye, have not attributed any share to an inhibition of the levator palpebræ; one physician, however, Dr. Lor, of Brussels, has argued that in the closure of the human eye such an inhibition does under certain circumstances occur.

"Note on the Densities of 'Atmospheric Nitrogen,' Pure Nitrogen, and Argon." By William Ramsay, F.R.S. Received December 3,—Read December 15, 1898.

M. A. Leduc in a recent paper* has discussed the relation between the density of argon, its proportion in atmospheric nitrogen, the density of the latter, and that of pure nitrogen. It appears to me that he has misunderstood some of the data given by Lord Rayleigh, Dr. Kellas, and myself; and as the question whether the found density of argon corresponds with that calculable from the other data, is in itself an interesting one, I have the honour to present this note to the Society.

* "Recherches sur les Gaz," 'Ann. Chim. Phys.,' September, 1898.

The data may be divided into two groups: those of Leduc and Schloesing; and those of Rayleigh, Ramsay, and Kellas.

From the first group it is possible to calculate the density of argon, *i.e.*, the crude mixture left after separating oxygen and nitrogen from air.

From the second group, the density of argon may be calculated; or if that be assumed, both groups give data for the calculation of that of "atmospheric" nitrogen. It has been thought better to express the results in the form of the weight of one litre of the gas in question; but if it is desired to state them with reference to the density of oxygen = 16, the conversion may be made by means of the weight of a litre of oxygen according to both Lord Rayleigh and M. Leduc.

The data are as follows :—

Weight of 1 litre of	Leduc.	Rayleigh.	Schloesing.	Kellas.	Ramsay.
Air..................	1·29316	1·29327			
Oxygen	1·42920	1·42952			
Nitrogen	1·25070	1·25092			
" (atmo.)	1·25700	1·25718			
Argon	...	1·78151	...	...	1·7816
" in "atmo." nitrogen......	...	...	0·01183	0·01186	

Weight of 1 litre argon calculated from Leduc's and Schloesing's figures :—

$$0{\cdot}01183x = 1{\cdot}25700 - (1{\cdot}25070 \times 0{\cdot}98817); \text{ hence } x = 1{\cdot}7828$$

The difference from the value found is 7 in 10,000.

Weight of 1 litre argon calculated from Rayleigh's and Kellas's figures :—

$$0{\cdot}01186x = 1{\cdot}25718 - (1{\cdot}25092 \times 0{\cdot}98814); \text{ hence } x = 1{\cdot}7791.$$

The difference from the value found is 13 in 10,000.

Both of these results are quite satisfactory, considering that the nature of the calculation involves a ratio of small differences. The agreement is more striking if the density of "atmospheric" nitrogen is calculated from the figures; for this calculation, the weight of 1 litre of argon is assumed to be 1·7815 grams.

Weight of 1 litre of "atmospheric" nitrogen from Leduc's and Schloesing's figures :—

$$x = (1{\cdot}7815 \times 0{\cdot}01183) + (1{\cdot}25070 \times 0{\cdot}98817); \text{ whence } x = 1{\cdot}25698.$$

Here the difference is only 2 in 125,000.

From Lord Rayleigh's and Dr. Kellas's figures, we have :—

$$x = (1{\cdot}7815 \times 0{\cdot}01186) + (1{\cdot}25092 \times 0{\cdot}98814); \text{ whence } x = 1{\cdot}25721.$$

The difference here is only 3 in 125,000.

It is thus evident that either set of figures gives results as concordant as could be wished; and that the density of "atmospheric" nitrogen is correctly given as the mean of the densities of the constituents, taken in the proportion in which they occur.

"The Preparation and some of the Properties of Pure Argon."

By WILLIAM RAMSAY, F.R.S., and MORRIS W. TRAVERS. Received December 12,—Read December 15, 1898.

In the memoir on Argon, a new constituent of the atmosphere,* by Lord Rayleigh and one of us, reasons are adduced on pages 235 and 236 in favour of the supposition that argon is an element, or a mixture of elements; and on page 236, the following words occur:—"There is evidence both for and against the hypothesis that argon is a mixture, for, owing to Mr. Crookes's observations of the dual character of its spectrum; against, because of Professor Olszewski's statement that it has a definite melting point, a definite boiling point, and a definite critical temperature and pressure; and because on compressing the gas in presence of its liquid, pressure remains sensibly constant until all gas has condensed to liquid. The latter experiments are the well known criteria of a pure substance; the former is not known with certainty to be characteristic of a mixture." And on pages 257–259 of the same volume, it is shown by Professor Sydney Young and one of us, that the ratios between the boiling points of argon and benzene, argon and alcohol, and argon and oxygen on the absolute scale are such that it is possible to compute the boiling points of argon at different pressures with very considerable accuracy. We therefore draw the conclusion:—"It is hardly likely, though not impossible, that so good an agreement would be obtained with a mixture or an impure substance. It is, at any rate, certain that a distinct want of agreement would have shown that argon was not a definite, pure substance, and the results may be taken as affording additional confirmation of the conclusion that argon is a definite, hitherto unknown constituent of the atmosphere, and that it has been isolated in a state very closely approaching to purity."

The density of a sample of argon prepared by means of magnesium was found by one of us to be 19·941 (O = 16); and a much larger preparation by Lord Rayleigh, obtained by exposing a mixture of air and oxygen to an electric flame in presence of caustic soda, possessed the density 19·94. Supposing argon to be a simple substance, and not a mixture, the atomic weight would therefore be 39·88. An attempt was made by Dr. J. Norman Collie and one of us to effect a separation

* 'Phil. Trans.,' A, (1895), p. 187.